The South Carolina
Forest Steward
Summer 2008

Insects and weather are two issues that forest landowners must contend with every year. In the summer issue of the South Carolina Forest Steward, you will find articles on the southern pine beetle outlook, other pine bark beetles and information on weather related issues. Also inside is information on planting native plants for wildlife and on a biofuels process that may have promise for leftover logging debris and precommerical trees that currently have no value. In addition, you'll find the latest Timber Mart-South prices and upcoming meetings.

As always, we greatly appreciate the writers who submitted articles and the readers who sent in suggestions. If you have a suggestion for a topic in a future issue, please email or call: Tom Brant, jbrant@clemson.edu, (864) 465-2112 ext. 115, or Bob Franklin, rmfrnkl@clemson.edu, (843) 549-2595 ext 121.

Tom Brant, Extension Forester, McCormick County, and Bob Franklin, Extension Forester, Colleton County
Co-Editors

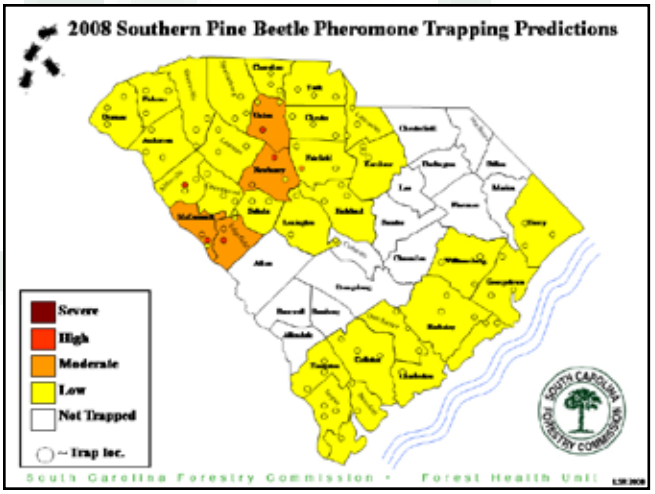
Southern Pine Beetle Predictions – 2008

Laurie Reid, Entomologist/Forest Health Specialist, South Carolina Forestry Commission

Each year, the South Carolina Forestry Commission's Insect and Disease (I&D) Section (with much help from field personnel) monitor Southern Pine Beetle pheromone traps in 31 South Carolina counties. In each county, three (3) pheromone traps are monitored for a 28-day period during early spring; traps are active just after the dogwoods bloom (mid-March) through April. The insects captured in each trap are collected weekly and returned to the I&D laboratory for analysis. The total number of SPB for each trap and the percentage of SPB to clerid beetles (the major predators of SPB) are determined. Based on this trapping, a population prediction is determined for each county. In the past, such surveys have had a success rate of over 80% in predicting the degree of SPB infestation during the following summer.

In 2008, we predict none of the counties trapped to experience a severe Southern Pine Beetle outbreak. Additionally, Abbeville, Edgefield, McCormick, Newberry, and Union Counties trapped sufficient beetles receive a prediction of static – moderate pine mortality. In these counties, we can expect a few scattered beetle spots. The other 26 counties we sampled had few beetles trapped and are not expected to have widespread problems. These counties include Anderson, Beaufort, Berkeley, Charleston, Cherokee, Chester, Colleton, Dorchester, Fairfield, Georgetown, Greenville, Greenwood, Hampton, Horry, Jasper, Kershaw, Lancaster, Laurens, Lexington, Oconee, Pickens, Richland, Saluda, Spartanburg, Williamsburg, and York.

Statewide, the number of Southern Pine Beetles trapped increased slightly by 6% from last year's total and the number of clerids dropped by 38%. This clerid population is still fairly high, and should constrain SPB development in most areas, including those with some predicted beetle activity. In the coastal plain counties, we trapped very few beetles. The low trap levels of this year indicate unfavorable conditions for SPB development. Historically, outbreaks in the coastal plain occur shortly after climatological changes. The change is usually from drought to excess soil moisture. This pattern of precipitation has occurred



during the last two years, and some pines have been dying. However, the culprits have been either Black Turpentine beetles or Ips engraver beetles.

These trapping data results are for entire counties and there is always the possibility of sporadic and localized beetle activity in counties with overall predictions of low population levels. Activity is most likely in susceptible pine stands that are overstocked, overmature or stagnant, have poor drainage or have littleleaf, annosus, or other root diseases present and causing stress.

We will be conducting aerial surveys in all South Carolina counties this summer. In the unlikely event of significant beetle activity, we will fly 100% surveys and notify affected landowners that beetle spots are present on their properties.

As mentioned above, Ips and Black Turpentine Beetles continue to cause mortality in overstocked stands and in areas where excessive rainfall coupled with impermeable hardpan caused some drowning of roots. A summer drought was also responsible for some stress that led to attack by these less aggressive beetles. Since these insects require different control tactics than SPB, it is important to determine which insect is causing each infestation. Ips beetles are identifiable by their galleries that are usually H or I shaped rather than the winding galleries of Southern Pine Beetles. Adult Ips beetles also eject the frass from their galleries while the SPB packs its galleries with frass. Black Turpentine Beetles attack the basal portions of the trunk and are a much slower killer than SPB or Ips. We can assist with this identification or provide training where needed. Last summer we evaluated multiple stands that were harvested due to Ips and Black Turpentine Beetle activity.

Not all Pine Beetles are the Notorious Southern Pine Beetles!!

Laurie Reid, Entomologist/Forest Health Specialist, South Carolina Forestry Commission

When pine trees die, often the first thought to pass the landowners' mind is that the Southern Pine Beetle attacked the trees. This is not always the case.

In South Carolina, there are five species of pine beetles that will attack, and sometimes kill, pine trees; three species of Ips engraver beetles, the Southern Pine Beetle, and the Black Turpentine Beetle. These beetles attack a different portion of the tree; some have characteristic galleries under the bark, and pitch tubes that will aid in identification. Correctly identifying the species of pine beetles is very important as there are different control strategies. In addition to these five species, Ambrosia Beetles and Southern Pine Sawyer Beetles, often considered secondary pests, will attack stressed, dying, or recently killed pine trees.

Ips Engraver Beetles

Ips Engraver Beetle
Photo by Gerald J. Lenhard, Bugwood.org

Ips beetles attack stressed trees, such as lightning struck, fire and storm damaged trees, logging slash or stumps, or trees that are stressed due to drought. These beetles can build up in numbers rapidly, sometimes completing their life cycle in as little as 20 days in the summer, allowing for multiple generations per year.

Each of the three species of Ips beetles attacks a distinct portion of the bole. Ips beetles are named for their size and the number of spines on the scooped out portion of their wings. The small (or 4-spined) Ips beetle usually attacks the upper portion of the tree, such as limbs and tops, and can be found in logging slash. The medium (or 5-spined) Ips beetle usually attacks the middle to upper portion of the bole, and can be found in logging slash. The large (or 6-spined) Ips beetle usually attacks the bottom half of the tree.

When these beetles tunnel under the bark, the resulting galleries are typically in I-, H- or Y-shaped patterns. Ips beetles introduce blue stain fungi into the trees when they attack. The fungus blocks the flow of water to the tree crown, causing the tree to wilt and die. The foliage turns from dull green, to yellow green, to a red-brown color. During the summer months when the foliage turns red, the new generation of adult beetles has emerged from the tree.

If the tree is healthy enough, creamy white to red-brown, dime or smaller-sized pitch tubes are present in the bark crevices. However, if there are no pitch tubes present, due to tree health or drought, a fine red-brown boring dust in bark crevices or trapped in spider webs near the tree base can be found.

Maintaining tree health, delaying thinning during drought, salvaging storm damaged trees, minimize damage to trees and roots during logging, and reducing the amount of slash left after logging will help to minimize the damage due to Ips beetles. Ips

killed trees should be promptly salvaged or at least removed from the stand. Trees than cannot be removed from the site should be debarked, burned (during low fire danger), or chipped.

Black Turpentine Beetles

The Black Turpentine Beetle (BTB) most frequently attacks stumps, trees damaged by logging or landscaping equipment, or lightning, drought, or flood stressed trees. BTB are very attracted to the turpentine odor from tree wounds. They can complete the life cycle in 70-90 days in summer months and there can be 2-4 generations per year.

Black Turpentine Beetle
Photo by David T. Almquist, University of Florida , Bugwood.org

BTB generally attack from the ground up to 12 feet on the tree bole. The quarter-sized pitch tubes are reddish-brown to purple in color. Creamy white irregularly shaped boring particles are found at the base of the tree. The galleries under the bark are a relatively shapeless vertically excavated area. Larval feeding girdles the tree.

Reducing damage to trees and roots during logging and in the landscape will help to minimize the damage due to BTB. Trees are damaged during logging should be removed.

Ambrosia Beetles

Common Ambrosia Beetle
Photo from Pest and Diseases Image Library, Bugwood.org

There are several species of Ambrosia Beetles, some of which attack pines and some attack hardwoods. Ambrosia Beetles that typically attack dying pines are found in association with one of the previously mentioned pine beetles. These beetles carry a fungus into the tree when they attack. The fungus grows in the galleries and is eaten by the developing larvae. The fungus blocks the flow of water to the tree crown, causing the tree to wilt and die.

Ambrosia Beetle damage can be quickly identified by the fine, flour-like boring dust at the base of the tree. When the boring dust is fresh, it is white in color, but fades to a yellow-tan color with time. If the Ambrosia Beetle boring dust is found at the base of the tree, even if the needles are green, the tree should be considered dead. Trees in the landscape that have been attacked by these beetles should be removed as they pose a safety hazard.

Southern Pine Sawyer Beetle

The Southern Pine Sawyer Beetles are large beetles, often 1-1½ inches in length, with antennae that are longer than their bodies. Pine Sawyers attack recently killed pines and, in forested situations, should be considered beneficial insects as they hasten the decomposition of dead trees.

Southern Pine Sawyer
Photo by Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org

Presence of these beetles can be identified by the football shaped excavated area on the bark. The female Pine Sawyer beetle chews an oval shaped, concave egg nitch into which she lays one to several eggs. The larvae tunnel under the bark where they begin feeding on the cambium. As the larvae develop and grow larger, the chewing sound from their feeding can be easily heard. Larvae tunnel into the sapwood to pupate. If the bark is peeled back, creamy white larvae with a tan area behind the head, finely shaved wood particles, and excavated galleries can be found. The adult exit holes are perfectly round.

If your pines have been killed, a little investigation into the cause of death can help you decide what, if any, control strategies need to be employed. By simply looking for pitch tubes and their location, looking for boring dust, or by peeling the bark off, you will be able to determine if your trees were attacked by pine beetles and by which beetle. For more information and pictures, please visit http://www.barkbeetles.org or contact iandd@forestry.state.sc.us or your local South Carolina Forestry Commission office.

Plant American! Help Offered On Using Native Plants For Wildlife and Beauty

Johnny Stowe, Wildlife Biologist, South Carolina Department of Natural Resources

Wildlife biologists, foresters, extension agents and other natural resource professionals are increasingly turning to native plant species when managing land for wildlife, forest products, aesthetics, forage and other goals.

North Carolina State University recently launched a web site that provides detailed information on how to choose, plant and manage native species on lands ranging from urban yards and parks, to rural conservation lands. Dr. Chris Moorman, extension wildlife specialist for North Carolina State, headed up

the team that put together the "Going Native: Urban Landscaping for Wildlife with Native Plants."

Moorman, who obtained his doctorate in wildlife at Clemson University, says that although the site is primarily focused on the North Carolina landscape, "Most, if not all, of the plants we present on the site work equally well for South Carolina." Covered in the Web site (http://www.ncsu.edu/goingnative/) are issues such as (1) why native plants are preferable (because they generally do not require coddling during extreme weather conditions nor to protect them from insects and other pests, since they are adapted to local environments; native wildlife species thrive alongside them, since they have interacted with one another for thousands of years; and they are part of our natural and cultural heritage), (2) how to choose the right species for certain soil types, light and moisture requirements, and particular wildlife species, which species are resistant to deer browsing, and (3) how to establish and manage these plants.

The web site of the South Carolina Native Plant Society (http://www.scnps.org/) also has valuable information on why and how to plant and manage native species. Sudie Daves, wildlife biologist for the Natural Resources Conservation Service in South Carolina, and member of the society, says that "native alternatives for long-used invasive exotic plant species are out there, it is just a matter of folks learning about them." Native herbaceous plant seeds are now becoming more readily available from seed vendors. Species that can be planted for soil stabilization on roads, disturbed areas, and for wildlife habitat include quickly establishing native grasses like Virginia wild rye, Canada wild rye, silky wild rye, deer tongue panic grass, and smooth panic grass. Native wildflowers like partridge pea, black-eyed susan, coreopsis, and Florida beggarweed work well in grass and forb seed mixes and will greatly benefit pollinators.

In the past, natural resources professionals all-too-often sadly ignored many of our native plant species, and instead brought in alien species from Europe and Asia when bare ground needed stabilization, and in attempts to create wildlife habitat and pasturage for livestock. The legacy of that trend is evident in the millions of acres in the U.S. that are infested with fescue, kudzu, autumn olive, interstate lespedeza, bahiagrass, privet, princess tree, tree-of-heaven, and other noxious pests. These species don't stay where they are planted, and what is planted on one tract soon ends up on neighboring tracts, costing much time and money to control.

In South Carolina, residents like to promote use of local products. The South Carolina Department of Agriculture promotes locally grown agricultural products with its "Nothing's Better, Nothing's Finer" slogan, and many residents like the idea of "Buying American" because they have pride in our own products, and like to support our country's economy.

Long ago, wildlife biologists realized that managing native wildlife species made much better sense than introducing exotic animal species from other continents. Exotic animals tend to be either aggressive and take over habitat from native species, or else require constant nurturing in order to survive. It took us a lot longer to realize it, but biologists now know that introducing alien plant species for native wildlife habitat is often inefficient at best, and at worst can be ecologically and economically destructive. So help preserve our Southern heritage by planting and managing native plants, the ones that belong here.

For more information, visit http://www.ncsu.edu/goingnative or send an e-mail message to goingnative@ncsu.edu.

DNR protects and manages South Carolina's natural resources by making wise and balanced decisions for the benefit of the state's natural resources and its people. Find out more about DNR at www.dnr.sc.gov.

Impacts of the April Frosts on Oak Mast

W. Cory Heaton, Agriculture and Natural Resources Agent, Clemson Extension Service

Below freezing temperatures during the first weeks of April have brought concerns for many forest and wildlife managers across the state. The Easter freeze that was experienced last year certainly provided plenty of reason for concern. Total oak mast failure was experienced in many portions of the upstate last year. Wildlife populations were left searching for food like I have never seen before.

The Easter freeze last year was a disaster for oak reproduction. The state experienced above normal temperatures in late February through March. Oaks put out leaves and reproductive structures earlier than what is normally expected. Temperatures then fell down into the teens in many areas and stayed there for a while. The sustained well below freezing temperature took a toll on the fruiting structures of oaks.

Conditions this spring appear to be much different than last year. Temperatures have been near or below normal with very few above normal temperature days

having been recorded. Trees did not begin to green up and put on fruiting structures as early as they did last year. Another major difference in the frosts experienced this April is that temperatures were just barely below the freezing mark (30-31º F) and were only that low for short periods of time.

While there may be some damage to the acorn crop from this year's frost, I don't anticipate it to be nearly as severe as what was experienced last year. Red oak masts will most likely be low this fall as it takes red oak acorns 2 years to mature and fall. The ones fertilized last year would be expected to fall this year, but given the severity of last year's freeze very few of those acorns are likely to have survived in the upstate.

It is still too early for us to know exactly what the impacts of the April 2008 frosts will be. If you are curious about the impacts on your property a mast crop survey can provide you with the answers. Mast crop surveys are very simple to conduct. In mid to late summer take a walk through your hardwood stands and use binoculars to scan the canopy looking for acorns. Most of us are in the woods at this time of year as we begin scouting for deer and planting food plots, and a little extra time in the outdoors never hurt any of us.

Dealing with Storm-Damaged Trees

It's been a stormy spring across South Carolina this year and hurricane season is upon us. We get the question every year, "What to do about trees damaged in windstorms?" There are two new publications available that shares the latest on dealing with storm damaged trees.

Assessing Damage and Restoring Trees After a Hurricane is produced by the University of Florida. This booklet tells how to be safe around fallen trees after a hurricane, how to restore damaged trees and ways to prevent damage in the event of future storms. You can view this publication on the web at: http://edis.ifas.ufl.edu/EP291.

Photo by Joseph O'Brien, USDA Forest Service, Bugwood.org

Storms over the Urban Forest: Planning, Responding and Regreening is a U.S. Forest Service publication intended to assist community leaders and governmental agencies as they prepare for natural disasters, respond when they occur and recover from the loss of vegetation. You can view the publication at: http://www.treesearch.fs.fed.us/pubs/11057.

From: Spring 2008 Leaves of Change, a quarterly bulletin of the Centers for Urban and Interface Forestry, Southern Research Station, USDA Forest Service

Master Tree Farmer 2008 Special Series

FOREST RISKS AND RISK MANAGEMENT

WHEN: September 9, 16 and 23, 2008

WHERE: Locations around the South

WHO: Contact your local county Extension office or the contacts listed at the bottom of this flier for more information regarding viewing sites in the South.

Risks exist with every endeavor we face in life and this is certainly true with forest management. This three-week event will concentrate on the risks associated with forest management and allow landowners and natural resource professionals to consider how they can manage forests and forestland to plan for and minimize problems they may face.

In South Carolina the course will be offered in nine loctions: Barnwell, Clemson, Darlington, Edgefield, Greenville, Horry, McCormick, Newberry and Walterboro.

The course fee is $90, or couples may pay $135 and receive one set of handout materials. Couples wanting two complete sets of materials pay $90 each. Registrants will receive a notebook and speakers notes for each session. Persons completing the program will receive a certificate, a Master Tree Farmer cap, and a subscription to Tree Farmer Magazine. The deadline for early registration is August 26, 2008. The late registration fees are $120 and $195.

September 9, 2008
An Introduction to Managing Risk in Your Forest; Understanding and Managing Natural Disasters & Changing Climate

September 16, 2008
Managing and Mitigating Invasive Plant Species, Insects & Diseases

September 23, 2008
Taxes, Policy, Regulations, Law and Land Use Change

This program is coordinated by Clemson University and the Southern Regional Extension Forester. For more information contact your county or state Extension office, visit the Master Tree Farmer website at http://www.mastertreefarmer.net, or contact George Kessler, gksslr@clemson.edu, (864) 656-4836, or Bill Hubbard, whubbard@uga.edu, (706) 542-7813. Sponsors include the American Tree Farm System, the USDA Forest Service and BASF.

SC Tree Farm Forestry Conference

The South Carolina Tree Farm Forestry Conference will be held November 12, 2008 at the Hilton Head Marriott on Hilton Head Island. The conference is open to all landowners, Tree Farmers, foresters, natural resource professionals, and others interested in improving forest management, or learning more about the latest issues such as Tree Farm certification, biomass utilization, carbon sequestration, Farm Bill, and the present and future of forestry. The registration fee is $90 ($100 after November 1). For more information about the conference, contact Dr. Walt McPhail at (864) 288-7618. To register, contact Sandy Jennings at the South Carolina Forestry Association at (803) 798-4170 ext. 10 or sandy@scforestry.org.

E-Coal: Is It the Answer to the World's Energy, Climate Woes?

From the July 2008 issue of The Forestry Source

What would you say if there was an alternative fuel made from woody biomass that was completely pollution free, remarkably efficient, carbon dioxide (CO2) negative, could be stored anywhere, used no fossil fuels in its production, matched or exceeded the BTUs (British Thermal Units) of coal, could be used in the existing energy infrastructure with no retrofitting, and was completely sustainable? Now what would you say if I told you this fuel already exists and is available right now?

Chances are, you'd want to know what it's called. Its manufacturer, New Earth Energy, Inc., a renewable energy company based in Seattle, Washington, calls it "E-Coal" and, according to New Earth's literature, this "revolutionary" new biomass fuel "is an improvement over all other forms of biomass fuel, such as regular wood and wood pellets."

The New Earth Energy, Inc., product E-Coal, an alternative fuel made from biomass, was specifically designed as a flex fuel that can be used in coal burning power plants to reduce carbon dioxide and other greenhouse gas emissions.

Ahava Amen, president and chief executive officer of New Earth Energy, believes that E-Coal is a significant improvement over fossil coal, too.

"If you had to design the perfect product for the electric power generation industry, E-Coal would be it," said Amen. "It produces the same BTUs but is cheaper than fossil coal when you factor in the carbon credits. It is CO2 negative, it acts like coal in terms of combustion and storage, but it's smokeless and odorless, and it's ready to use in the existing infrastructure. So, you get the benefits of fossil fuels with the benefits of biomass."

The key to E-Coal's benefits, said Amen, is "ECOTorrefaction," the proprietary and sustainable technology that New Earth Energy uses to produce it.

According to information provided by the company, ECOTorrefaction involves "placing biomass in a chamber absent of oxygen and heating to temperatures of 250 degrees Celsius and above." Under such conditions, the "organic smoke-forming volatiles and other naturally occurring pollutants separate from the biomass." What remains is the "component of the biomass used to produce energy."

In addition, said Amen, the ECO-Torrefaction process also produces an E-Oil, which can be used as

an alternative to fossil oil and can be further refined for use as a transportation fuel.

Any type of biomass – seaweed, algae, agriculture and animal waste, etc. – can be used to produce E-Coal, said Amen, but the company primarily relies on short-rotation woody biomass crops.

"Willow is one of the specific species that we use," he said. "We also are considering the use of hybrid poplar. In other countries it could be anything from eucalyptus to pine to bamboo. It's really a matter of what grows well in that region and whether it can be used as a short-rotation, woody biomass energy crop."

In addition to producing biomass from plantations, which the company cultivates on what it calls degraded lands that cannot be used for agriculture, Amen said the company is interested in procuring biomass from thinning operations as well.

"Yes, we're very interested in [material from thinning operations] and it's one of the things that we've spoken to the US Forest Service about. We're open to everything," he said. "All we really need is organic based feedstock. Thinnings could be that feedstock, but the question is: How do you get it out of the forest in a cost effective way? That's been the challenge."

Given the difficulty of procuring necessary amounts of biomass from forests, Amen said that the company is seeking the expertise of foresters to help it achieve the sustainable production of dedicated biomass feedstock crops.

So if E-Coal is so promising why isn't it front-page news? It will be, said Amen.

For more information, contact Ahava Amen, president and chief executive officer, New Earth Renewable Energy, Inc., 600 Stewart Street, Suite 1400, Seattle, WA 98101; (206) 446-4731; ahava amen@newearth1.net; www.newearth1.net. From the July 2008 issue of The Forestry Source. ♣

TimberMart-South

Here is the second quarter 2008 price summary from TimberMart-South, published by the Warnell School of Forestry and Natural Resources at the University of Georgia. The prices shown are Statewide ranges of stumpage (standing timber) and the trend (up or down) from the previous quarter. These prices reflect the average range of stumpage prices reported to TimberMart-South for the quarter. The price you may receive for your timber can and will vary due to factors such as size of timber, amount, location to mills, access and demand. If you'd like more information on the TimberMart-South price reporting service, contact: TimberMart-South (706) 542-4756 or visit the website at: www.TimberMart-South.com.

Upcoming Events

September 9, 16, 23, 2008	Master Tree Farmer 2008. Forest Risks and Risk Management. For more information, see article on page 5.
October 7-10, 2008	Eastern Native Grass Symposium, Columbia, SC. For more information, go to http://people.clemson.edu/~bstrngr/E_Native_Grass/
October 8-9, 2008	Recreational Pond Management workshop, Georgetown, SC. For more information, go to www.clemson.edu/extfor/ and click on Continuing Education Calendar.
October 31, 2008	Natural Resources Enterprise workshop, Columbia, SC. For more information, go to www.clemson.edu/extfor/ and click on Continuing Education Calendar.
November 12, 2008	South Carolina Tree Farm Forestry Conference. For more information, see article on page 6.
November 17-18, 2008	Timber Taxation workshop, Columbia, SC. For more information, go to www.clemson.edu/extfor/ and click on Continuing Education Calendar.
Spring 2009	Estate Planning for Landowners. Check the web site www.clemson.edu/extfor for details to be announced.

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TimberMart-South 2nd Quarter, 2008

South Carolina Statewide Averages

Pine Sawtimber: $228-$279 MBF (per thousand board feet Scribner log scale) ($30.36-37.25/Ton). Trend is down.

Pine Chip-N-Saw: $41.12-57.91/Cord ($15.34-21.61/Ton). Trend is slightly down.

Pine Pulpwood: $17.69-$21.97/Cord ($6.10-$8.20/Ton) Trend is up.

Questions about this newsletter, submissions and requests for subscriptions should be directed to: Editor, Forest Steward Newsletter, Clemson University Cooperative Extension Service, Department of Forest Resources, 272 Lehotsky Hall, Box 340317, Clemson, SC 29634-0317. Phone: 864/656-2479.

The Forest Steward

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CLEMSON EXTENSION

The South Carolina Forest Steward Newsletter is sponsored by the Forest Stewardship Program in South Carolina. For more information on the Forest Stewardship Program, contact Scott Phillips at the South Carolina Forestry Commission, (803) 896-8844. The South Carolina Forest Steward is compiled and edited by Bob Franklin, Area Forestry & Wildlife Agent, Walterboro, South Carolina, and Tom Brant, Area County Extension Agent, McCormick, South Carolina.

SOUTH CAROLINA FORESTRY COMMISSION